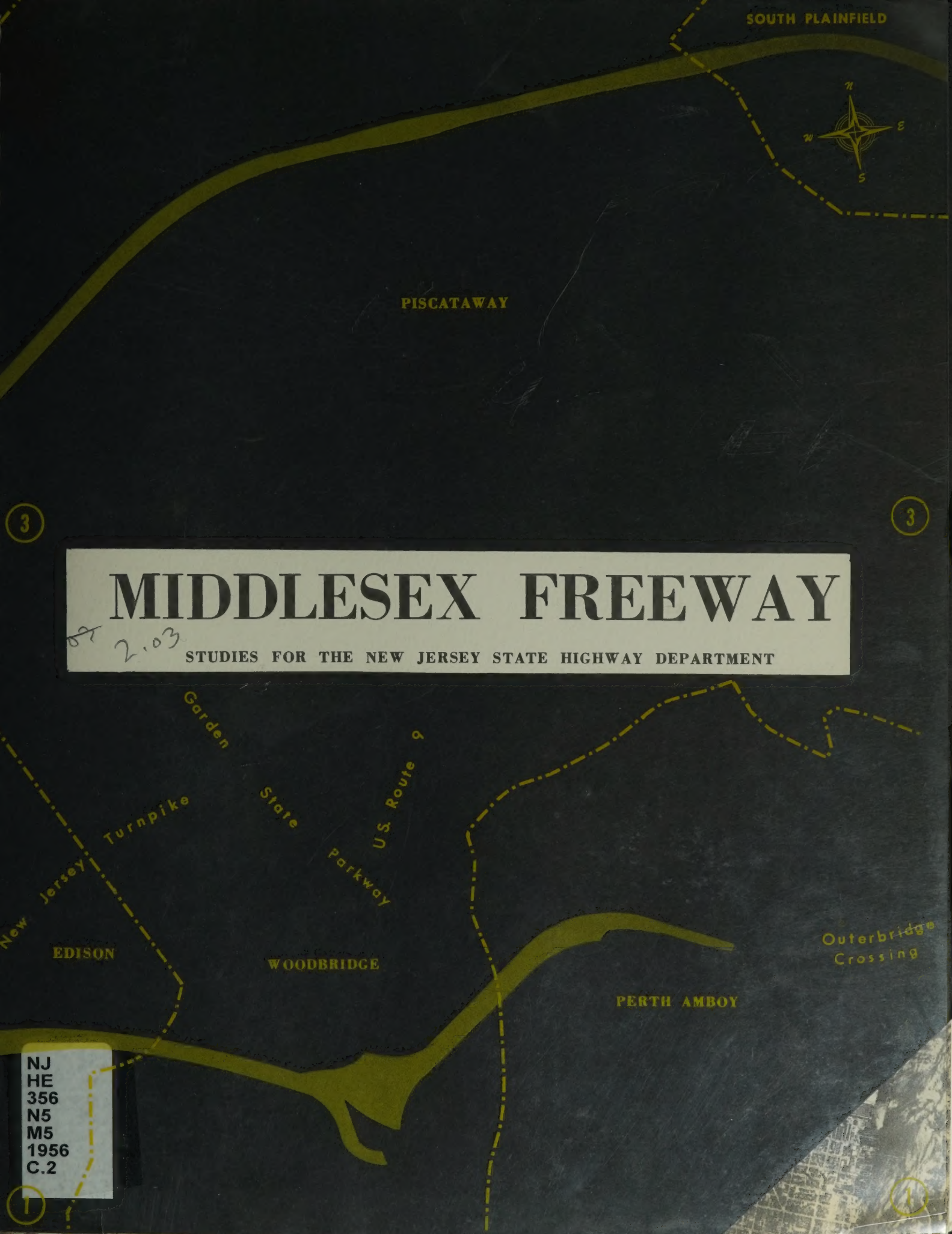

MIDDLESEX FREEWAY

STUDIES FOR THE NEW JERSEY STATE HIGHWAY DEPARTMENT

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1956
C.2

SOUTH PLAINFIELD
PISCATAWAY
3
3
Garden
State
Parkway
US Route 9
New Jersey
Turnpike
EDISON
WOODBRIDGE
PERTH AMBOY
Outerbridge
Crossing
1
1

MIDDLESEX FREEWAY

STUDIES FOR THE NEW JERSEY STATE HIGHWAY DEPARTMENT

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MIDDLESEX FREEWAY

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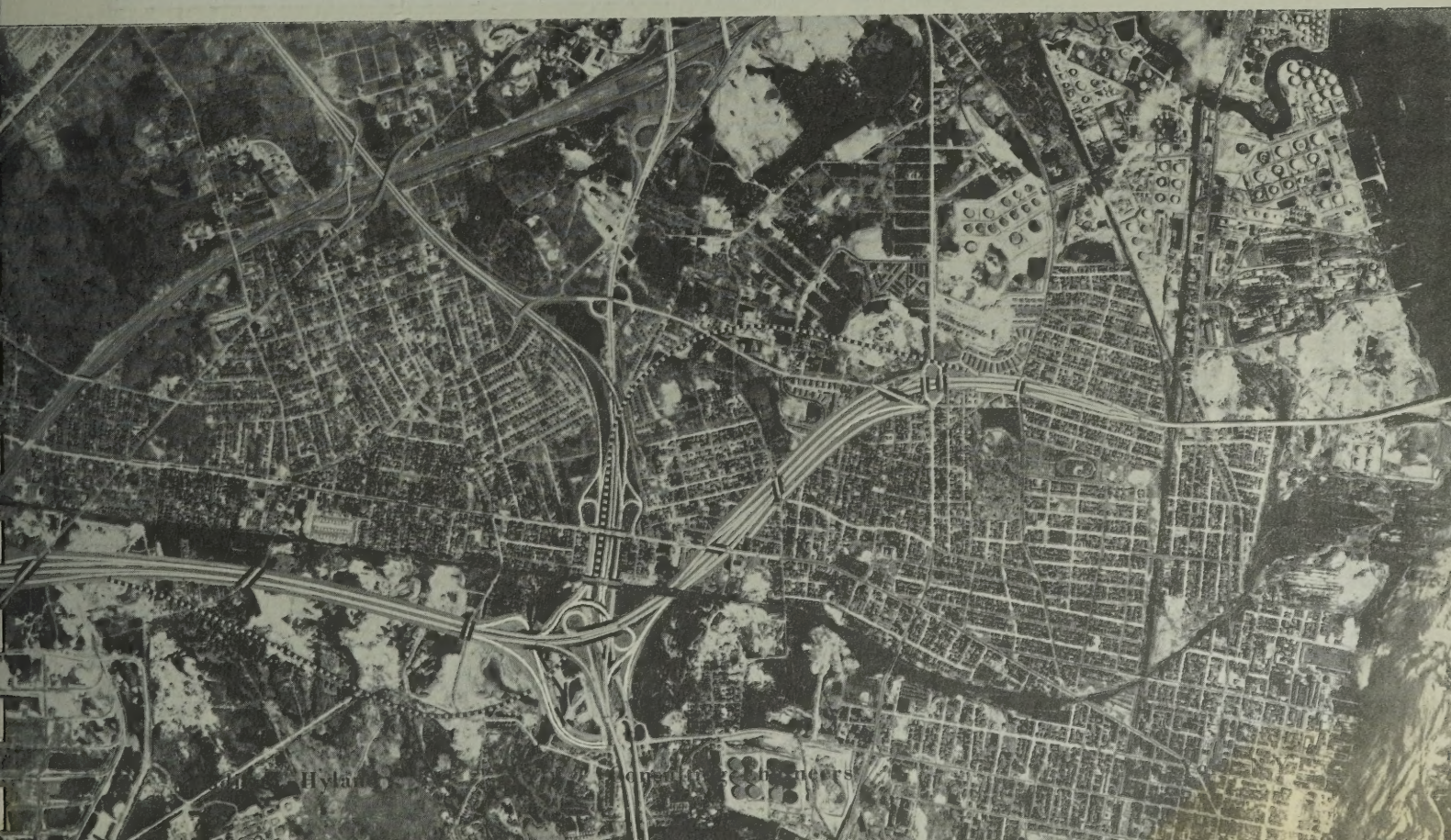
STUDIES FOR THE NEW JERSEY STATE HIGHWAY DEPARTMENT



NOTE: Front and back cover -
Aerial photograph showing
Route Study No. 1

MIDDLESEX FREEWAY

MARCH 28, 1956

MADIGAN - HYLAND CONSULTING ENGINEERS NEW YORK, N.Y.

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MIDDLESEX FREEWAY REPORT

LETTER

HISTORY OF THE PROJECT

REPORT ON MIDDLESEX FREEWAY ROUTE STUDIES

ROUTE STUDIES IN PERTH AMBOY AND WOODBRIDGE

ROUTE STUDIES IN EDISON AND PISCATAWAY

ROUTE STUDIES IN FRANKLIN AND BRIDGEWATER

TRAFFIC REQUIREMENTS

COMPARATIVE ESTIMATES

MADIGAN - HYLAND
28-04 41st AVENUE
LONG ISLAND CITY 1, N.Y.

STILLWELL 4-1213

MICHAEL J. MADIGAN
EMIL H. PRAEGER
CLINTON F. LOYD

March 28, 1956

Mr. Dwight R. G. Palmer, Commissioner
New Jersey Highway Department
1035 Parkway Avenue
Trenton, New Jersey

Dear Sir:

We submit herewith route selection studies and report representing the first phase of the engineering agreement dated November 30, 1955, for reconnaissance and preliminary engineering studies comprising limited topographic surveys, location and design criteria, plus right-of-way studies — including final right-of-way plans for the Middlesex Freeway.

This report covers an account of the reconnaissance survey for general location plans featuring more than the minimum of three possible locations, with comparative estimates and survey data for a feasible multi-lane freeway showing necessary interchanges, parallel service roads, recommended points of access and crossroad revisions in order that a definite selection of location may be made. We have contacted local engineers in order to amplify our knowledge of local problems and necessary rearrangement of streets and utilities.

The study contains exhibits other than aerial photographs and plans showing the location of the route studies, such as typical cross sections, ground photographs of existing conditions and profiles. This study is under the direction of E. F. Passarelli assisted by L. J. Royal and staff.

Respectfully submitted,

M. J. Madigan

HISTORY OF THE PROJECT

Official discussions for an east-west highway began in Middlesex County in 1937 but the advent of the War delayed further developments. The problem was studied by the Middlesex Planning Board since 1947 which later published recommendations for a Perth Amboy-Metuchen relief highway in connection with the planning of the New Jersey Turnpike.

Further studies were made by local planning boards, the State Department of Conservation and Economic Development and the New Jersey State Highway Department on a broader regional basis. These studies recognized the need for a route connecting Outerbridge Crossing with the north-south highway network in Somerset, Union and Middlesex counties, terminating at U. S. Highway 22.

Legislation for construction of the Freeway was introduced in the 1952 session of the legislature but was vetoed by the governor for minor technical reasons. However, a revised bill creating the limited access highway became law in April of 1953.

The State Highway Department in cooperation with the Bureau of Public Roads made an Origin and Destination Survey in Middlesex County especially to determine the need for an east-west traffic facility. The results of this survey are published in a report entitled, "Origin and Destination Survey — Middlesex County — 1953."

Completion of the New Jersey Turnpike and the Garden State Parkway hastened land development for industry and housing in the area and traffic congestion over existing east-west roads kept growing. Recently there are reports of loss of employees to some existing industries in the Somerville area due to abnormal traffic delays in Bound Brook involving workers getting to work or home from work. These tie-ups also interfere with normal business of residents of the built up areas through which the main streets are the only through roads available.

Studies in New York City for a bridge across the Narrows between Staten Island and Brooklyn with improved arterial connections from the Outerbridge Crossing to Long Island and New England highways, bypassing Newark and Manhattan Island, added emphasis to the Middlesex Freeway as a vital link between the states of New York and New Jersey.

The major highway network which the Middlesex Freeway would link by connecting the north-south arteries in New Jersey, including U. S. Highway 1, the Garden State Parkway and the New Jersey Turnpike which, in turn, connect or will connect with the New York State Thruway on the north and the Pennsylvania Turnpike and New Jersey shore points on the south, will permit vehicular travel between the Somerset-Middlesex area and points in New Jersey and surrounding states without stopping except for toll payment. There will be no tolls charged for use of the Middlesex Freeway.

Continued expansion of land development in the area studied for the routes is in evidence. Some of the major new developments are indicated and identified on the exhibits.

It is perhaps obvious, as stated by many local officials, that good Middlesex Freeway location opportunities are lessening rapidly as vacant land parcels become developed. In fact, it is probable that more building projects may be initiated in the time between the field investigations and presentation of this report which may justify changes in the alignment selected for the Freeway.

LEGEND

Middlesex Freeway Route Study

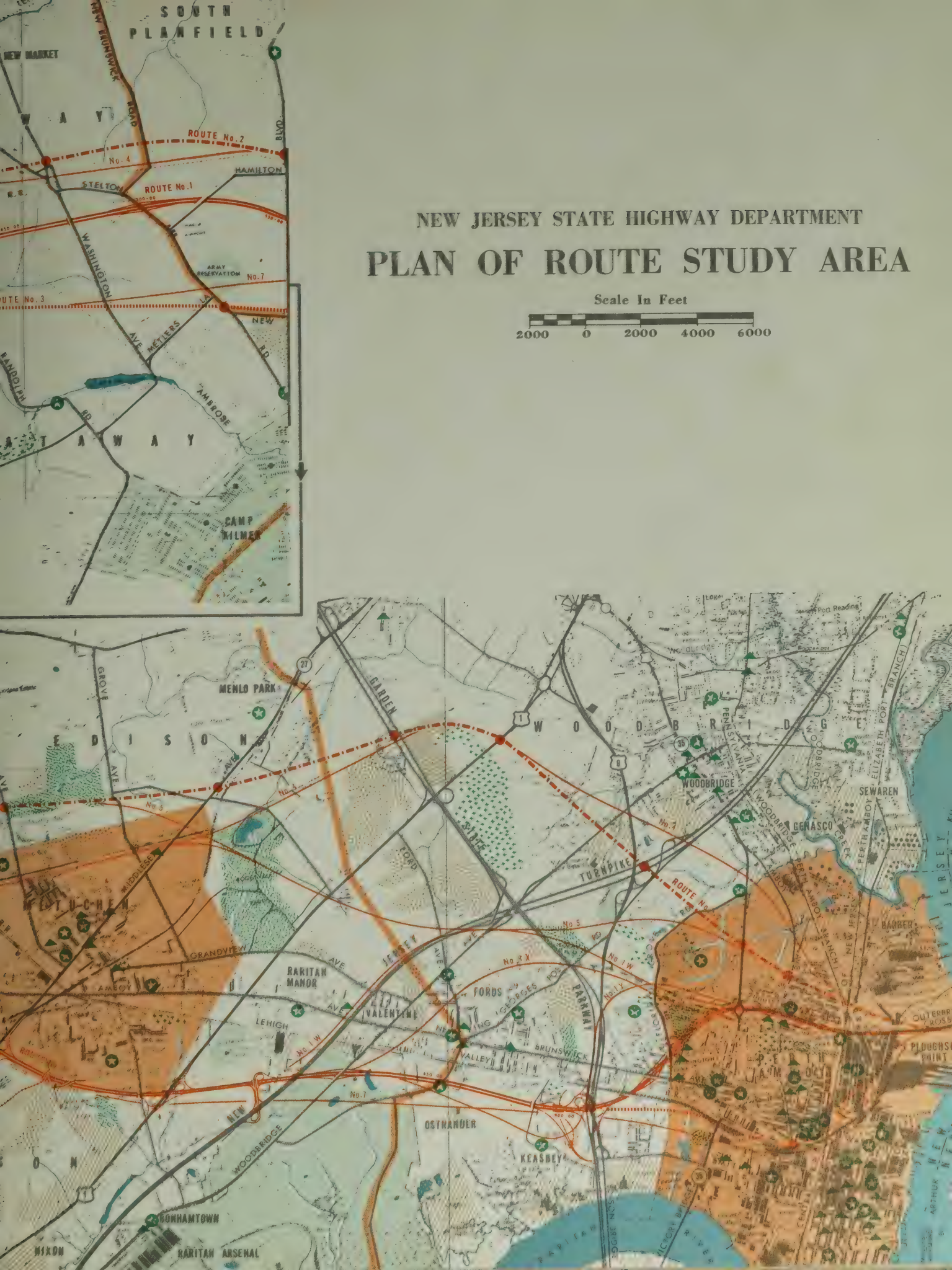
Park		Existing Housing Development	
Cemetery		Proposed Housing Development	
Government Property		Existing Industrial Area	
School		Proposed Industrial Area	
Church		Interchange	

NEW JERSEY STATE HIGHWAY DEPARTMENT

PLAN OF ROUTE STUDY AREA

Scale In Feet

2000 0 2000 4000 6000



REPORT ON
MIDDLESEX FREEWAY ROUTE STUDIES

This report contains an account, with illustrating exhibits, of the study by the engineering firm Madigan-Hyland of the alignments which appeared practical of consideration for the Middlesex Freeway, including routes previously proposed by others.

A primary procedure undertaken was a study of existing conditions and proposed public and private developments in the area to ascertain the location of major obstacles to possible routes. This defined the paths of least interference for the routes studied. These are shown on the exhibits. The aerial photograph was flown in the spring of 1954. Developments since then have been indicated to bring it up to date for route study purposes. The plan was made from several assemblies of plans and maps furnished by the New Jersey State Highway Department and various county, city and borough offices within the area of study. Other topographic information, principally contours, is based on U. S. Coast and Geodetic Survey maps.

In the process of comparison and elimination of routes with obvious disadvantages, the number of routes thus laid down was reduced to a choice between Routes 1, 2 and 3 as shown on the exhibits. These were studied in more detail and profiles were developed, including preliminary cost estimates for comparative purposes. The estimates are based on measurement of quantities of construction items taken from enlarged plans and profiles made as part of the study for this purpose. To determine estimated costs for bridges and structures, advance schematic plans based on span lengths, widths and skew angles were used. The land required for the right-of-way was defined on street maps for Routes 1, 2 and 3 and its value, for comparative purposes, was determined by the State Highway Department, Right-of-Way Division, subsequent to field inspection.

Practical considerations limiting time and funds did not permit this study to develop sufficient knowledge of the complex problems beyond the scope of engineering involving the various townships, cities and boroughs in the path of the Freeway. To supplement our knowledge of this phase, we visited the mayors, officials of planning boards and the city, borough and township engineers prior to determining the route locations. Their generous cooperation is gratefully appreciated. A

brief account of these interviews expressing official location preference was prepared and, together with other results of the routes subsequently studied, was reviewed with the State Highway Department.

On the basis of our studies, reviews and this supplementary information, it is our opinion the Middlesex Freeway located generally along Route Study 1 would best serve the communities in the area. Differences between routes affecting service to through traffic are less significant than local effects although Route 1 also has the advantage of being one of the shortest for through traffic.

In the Perth Amboy-Woodbridge area four alternative routes have been studied as variations of Route Study 1. These are identified as Routes 1W, 1X, 1Y and 1Z and are analyzed, together with the various other routes or portions of routes numbered from 1 through 10 in the report which follows.

To simplify the comparison of routes from the point of view of the effect on the localities traversed, the report dwells on all routes in Perth Amboy, Fords and Woodbridge first — then all routes in Edison and Piscataway — and, last, all routes in Franklin and Bridgewater.

ROUTE STUDIES IN PERTH AMBOY — FORDS AND WOODBRIDGE

A direct connection of the Middlesex Freeway to the Outerbridge Crossing will avoid forcing upward of 20,000 vehicles, according to the Origin — Destination Survey, daily through Perth Amboy city streets which are already burdened with many times that volume of local traffic.

In Perth Amboy, alignments to the south but east of and parallel to the north-south Central Railroad of New Jersey, shown on the exhibits as Route Studies 3, 9 and 10, have been investigated to determine the feasibility of skirting Perth Amboy with the Freeway connection to Outerbridge Crossing. The low elevation of the ground and extensive railroad facilities encountered require the Freeway to be carried on viaduct structures for about half a mile. Comparative estimates place the extra cost of the route in this location about $12,000,000 over schemes such as Route Study 1Y which utilizes the entire length of Outerbridge Crossing west approach. The Board of Commissioners of the City of Perth Amboy claim this new viaduct route would be detrimental to highly valuable industrial waterfront and railroad property and have passed a resolution indicating that the best interests of the City would be served by a Middlesex Freeway connection to Outerbridge Crossing located between Grove and Lawrence streets and along Pfeiffer Boulevard to and beyond the city line.

At the westerly city limits a line following the Perth Amboy resolution description along Pfeiffer Boulevard, shown as Route 1X on the exhibits, is restricted by two cemeteries on each side of the 120 foot wide right-of-way of Pfeiffer Boulevard. The minimum width required for the Middlesex Freeway under restricted conditions is 180 feet to accommodate the two roadway pavements of six twelve foot wide traffic lanes, a ten foot wide shoulder for disabled vehicles for each roadway, a median strip sixteen feet wide and a six foot wide strip on each side for wall construction where necessary to provide for differences in elevation between the existing ground and the Freeway profile. Earth slopes would require more width than walls. One way service roads of two ten foot wide lanes in each direction and a ten foot width of sidewalk on each side are minimum requirements to replace Pfeiffer Boulevard for local traffic.

Route IX passes through the southern portion of Fords Park. After crossing the Garden State Parkway it enters Fords, passing in the block

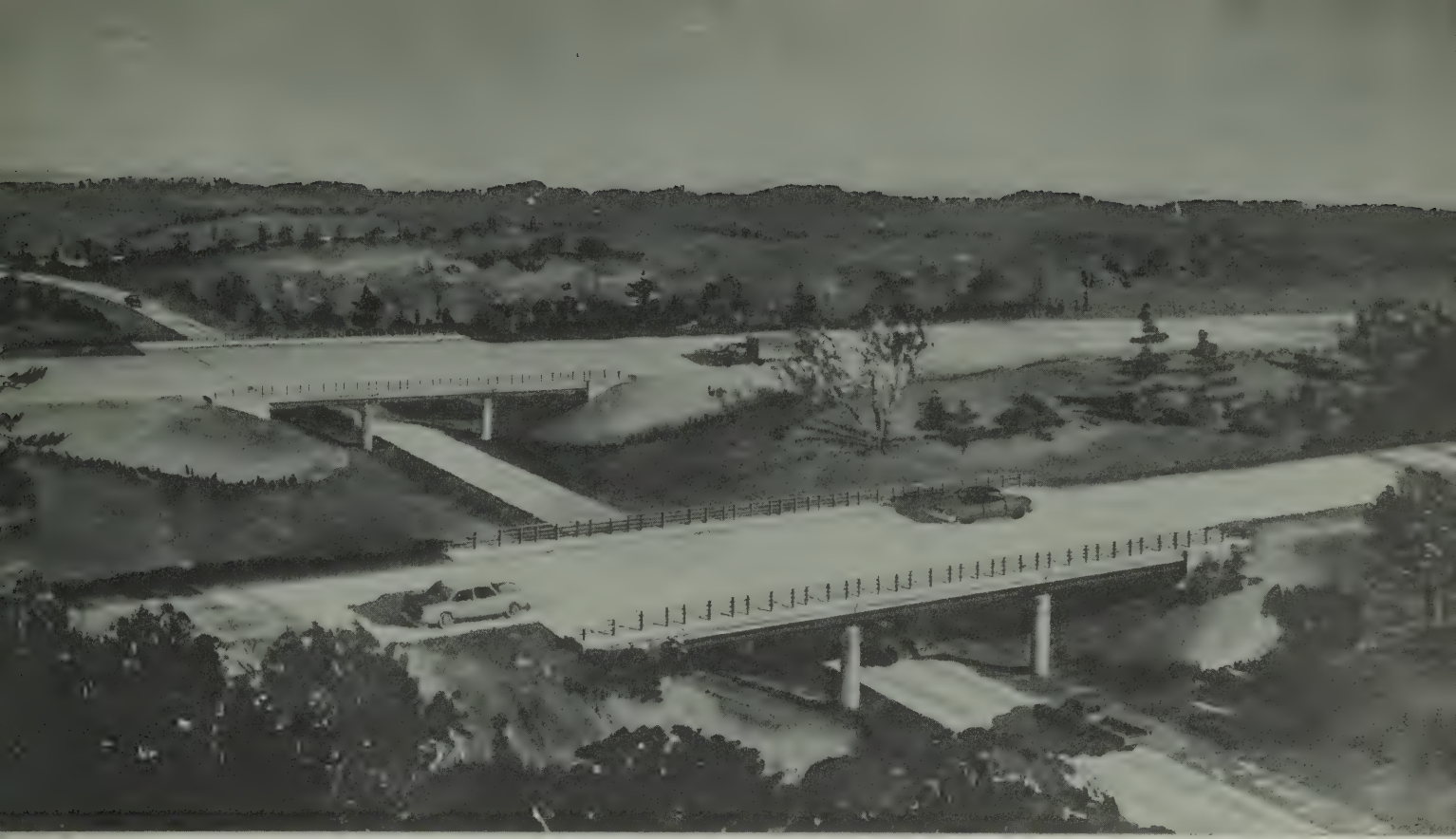
north of Woodland Avenue, then curves southwest, crossing New Brunswick Avenue near Bloomfield Avenue. As it crosses the Lehigh Valley Railroad, it curves to the east to rejoin Route 1.

Rather than subject the project to the difficulties and delays generally accompanying acquisition of cemetery property and because of the location of this route through Fords, modifications of the westerly portion of the route have been studied.

Route Study 1W, shown on the exhibits, was studied as a possible alternative route to avoid the restriction between cemeteries at Pfeiffer Boulevard near the Perth Amboy city line. In this location Route Study 1W passes through an undeveloped land strip between the cemetery on the north side of Pfeiffer Boulevard and a housing development now under construction. Going west the route passes through the north corner of Fords Park. After crossing the Garden State Parkway and Woodbridge Avenue, it curves to the southwest to parallel the New Jersey Turnpike. In passing adjacent to the west side of the New Jersey Turnpike to avoid acquisition of developed property, it is noted that the route requires some property designated for school development at the boundary between Woodbridge and Edison. However, adjacent vacant land is available to restore this school site. The proximity of the route to the New Jersey Turnpike and paralleling it for about 7000 feet, takes advantage of a largely vacant land strip to reduce the acquisition of buildings. The location of Route 1W in Woodbridge Township is for the most part adjacent to the Garden State Parkway and the New Jersey Turnpike so that it does not further sever large areas of the Township.

In the location of Route Studies 1X and 1W the long spur connecting with Smith Street, called for in the Perth Amboy Resolution, would be a separate project whereas Route Studies 1Y and 1Z, described below, tap the end of Smith Street with the same facilities required to connect with U. S. Highway 9.

Another modified location is indicated as Route Study 1Z on the exhibit plans and aerial photograph. In this location the Freeway will curve to the south before crossing the Woodbridge boundary, passing through the southeast corner of undeveloped Columbus Park within the city limits. This route crosses less than 2000 feet of Woodbridge Township north of the Lehigh Valley Railroad, involving forty-one buildings, in comparison with a two mile crossing of Woodbridge Township north of the railroad on the alignments of Routes 1X and 1W which require one hundred forty-three and thirty-four buildings respectively. Route Study 1Z would cross the Lehigh Valley Railroad 9000 feet further



Typical Freeway Bridge

Typical Bridge Over Freeway

COMPARISON OF ROUTES

Political Subdivision	Rt. Study 1W		Rt. Study 1X		Rt. Study 1Y		Rt. Study 1Z		Rt. Study 2		Rt. Study 3	
	Mileage	Apprx Bldgs	Mileage	Apprx Bldgs	Mileage	Apprx Bldgs	Mileage	Apprx Bldgs	Mileage	Apprx Bldgs	Mileage	Apprx Bldgs
City of Perth Amboy	1.2	95	1.2	84	1.2	94	1.2	177	1.9	94	2.3	102
Twnship of Woodbridge	1.8	34	1.6	143	2.3	30	1.7	41	3.0	3	1.6	0
Twnship of Edison (east)	1.8	46	2.0	81	1.9	25	1.9	27	3.6	12	1.9	27
Boro of Metuchen	1.3	25	1.3	25	1.3	25	1.3	25	-	-	1.3	25
Twnship of Edison (west)	2.0	20	2.0	20	1.8	20	1.8	20	-	-	1.8	23
Boro of South Plainfield	1.8	7	1.8	7	1.8	7	1.8	7	2.0	8	1.0	2
Twnship of Piscataway	4.2	20	4.2	20	4.2	20	4.2	20	3.2	25	4.5	12
Twnship of Franklin	2.1	17	2.1	17	2.1	17	2.1	17	-	-	2.7	5
Twnship of Bridgewater (east)	-	-	-	-	-	-	-	-	0.5	4	-	-
Boro of Bound Brook	1.1	37	1.1	37	1.1	37	1.1	37	0.6	0	-	-
Twnship of Bridgewater (west)	0.8	0	0.8	0	0.8	0	0.8	0	1.3	2	2.5	26
Boro of Middlesex	-	-	-	-	-	-	-	-	1.4	32	-	-
Totals												
Mileage & Buildings	18.1	301	18.1	434	18.5	275	17.9	371	17.5	180	19.6	222
Est. Constr. & ROW Cost	$55,465,000		$56,950,000		$58,445,000		$56,705,000		$52,287,000		$70,306,000	
Smith Street Spur												
Twnship of Woodbridge	1.1	0	1.1	0								
Twnship of Edison	1.2	4	0.6	4								
Spur from Rt. 22 to Easton Avenue												
Twnship of Franklin									2.1	17		
Boro of Bound Brook									1.1	37		
Twnship of Bridgewater									0.8	0		
Subtotals												
Mileage & Buildings	2.3	4	1.7	4					4.0	54		
Est. Constr. & ROW Cost	$ 4,625,000		$ 2,939,000						$12,514,000			
Totals Including Spurs												
Mileage & Buildings	20.4	305	19.8	438	18.5	275	17.9	371	21.5	234	19.6	222
Est. Constr. & ROW Cost	$60,090,000		$59,889,000		$58,445,000		$56,705,000		$64,801,000		$70,306,000	

Of the four alternatives for Route Study 1, 1X should be eliminated because of its higher cost and excessive number of buildings in the right-of-way. Route Study 1W, while not requiring too many buildings, is high in cost mainly because of the bridge required for the Smith Street spur across the New Jersey Turnpike which is duplicated. For this reason it is considered to be in a disadvantageous location and the choice is narrowed down between Routes 1Y and 1Z.

The main differences between these two remaining alternatives is the higher cost of $1,740,000 of Route 1Y over 1Z. This higher cost would reduce the number of buildings to be taken by 96. The difference of 96 buildings is made up of 83 in Perth Amboy, 11 in Woodbridge and 2 in Edison. The choice between these two routes should be made by the State Highway Department, depending on local reaction, since we consider the engineering differences to be minor.

East of Amboy Avenue the recommended location is Route Study 1 since this route, between Grove and Lawrence streets, is a direct extension of Outerbridge Crossing, offering good Freeway alignment over high ground and requiring no viaduct construction. The comparative economy of Route 1 and the fact that it is preferred by the City are also factors weighed in arriving at our recommendation.

Four traffic lanes will be provided on the Freeway connection to match the four lanes of Outerbridge Crossing. However, west of the first westbound entrance and the last eastbound exit the Freeway will have six lanes to accommodate the expected traffic. The six lanes west of these connections to local streets will permit traffic to and from the easterly portion of Perth Amboy to use the Freeway without congesting it. These Freeway connections to local streets near the Outerbridge Crossing will relieve Perth Amboy streets of all traffic to and from points outside the western city limits and easterly Perth Amboy. This street traffic relief is additional to the removal of through traffic by the Freeway.

Near Outerbridge Crossing Route Study 1 is favorably situated to accommodate the easternmost first westbound entrance and the last eastbound exit ramps, in contrast to comparable ramps on Route Studies 2 and 3. On Route 2 the ramps occur at a crossing of two railroads and the Freeway, creating three levels. On Route 3 the ramp location is over the railroad yard and through built up property.

Route Study 2 crosses too far to the north along U. S. Highway 1 to

divert east and westbound traffic from local east-west roads between Metuchen, Fords and Perth Amboy. Thus, the area most in need of traffic relief would not be served by the Freeway and the Freeway would be limited in usefulness in this location.

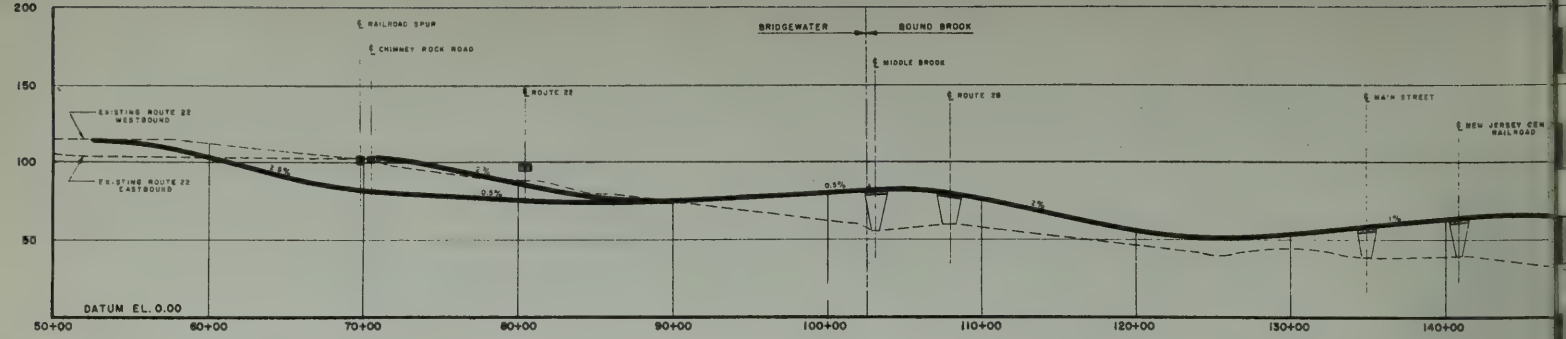
Route Study 4 takes off from the existing steel structure of Outerbridge Crossing, requiring viaduct construction, to avoid passing through the oil storage tanks between Amboy Avenue and Convery Boulevard. The tanks force the alignment to turn almost due north after crossing West Street at the waterfront. The route then heads northwest to pass between the two large cemeteries which are located near U. S. Highway 1. Even this location between the cemeteries requires acquisition of part of the proposed Ronson factory site.

To avoid passing through the State Home for Veterans and Metuchen the route is forced against the Philadelphia and Reading Railroad for a distance of four miles. This prevents reasonable interchange connections.

Passing this far north places the route out of the reach of Perth Amboy and Fords traffic to Staten Island. This traffic would continue to use local city streets to Outerbridge Crossing. The route is also undirectional for Fords and Perth Amboy westbound traffic as compared with the directness of New Brunswick and Amboy avenues.

This area north of Fords and the New Jersey Turnpike offers no other intermediate passage for the Freeway, being blocked by cemeteries and existing and proposed housing developments, as indicated by the exhibits.

Route Study 5 is the same as Route 2 at the Outerbridge Crossing, having the same disadvantages. On the west it bisects Roosevelt Park to avoid crossing the grounds of the New Jersey State Home for Disabled Veterans. As shown it passes through the Armory west of Route 9. If moved south of the Park, it would force the route through a cemetery and the built up area of Metuchen.


RAILROAD SPUR
CHIMNEY ROCK ROAD
BRIDGEWATER
BOUND BROOK
MIDDLE BROOK
ROUTE 22
ROUTE 28
MAIN STREET
NEW JERSEY CEN RAILROAD
EXISTING ROUTE 22 WESTBOUND
EXISTING ROUTE 22 EASTBOUND
DATUM EL. 0.00
200
150
100
50
50+00
60+00
70+00
80+00
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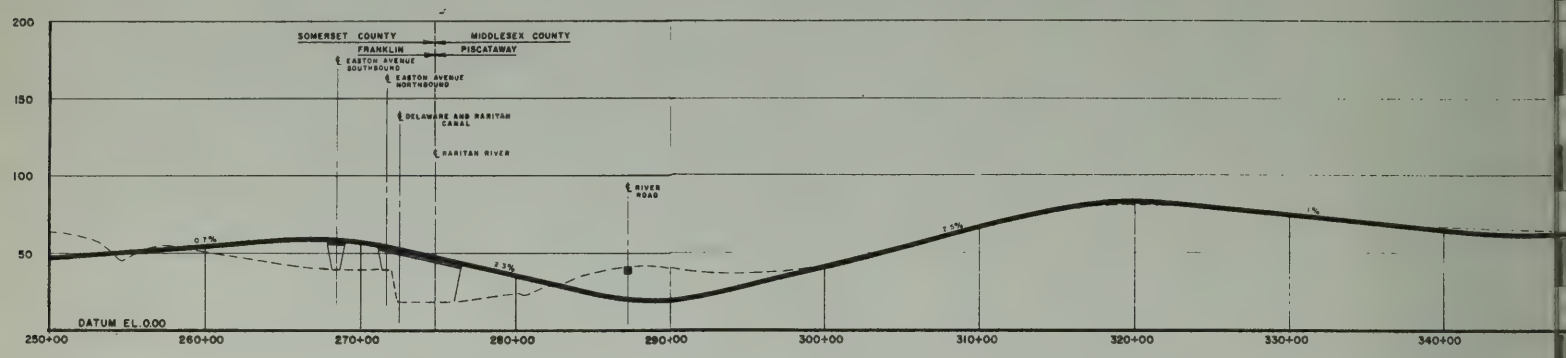
110+00
120+00
130+00
140+00


SOMERSET COUNTY
MIDDLESEX COUNTY
FRANKLIN
PISCATAWAY
EASTON AVENUE SOUTHBOUND
EASTON AVENUE NORTHBOUND
DELAWARE AND RARITAN CANAL
RARITAN RIVER
RIVER ROAD
DATUM EL. 0.00
200
150
100
50
250+00
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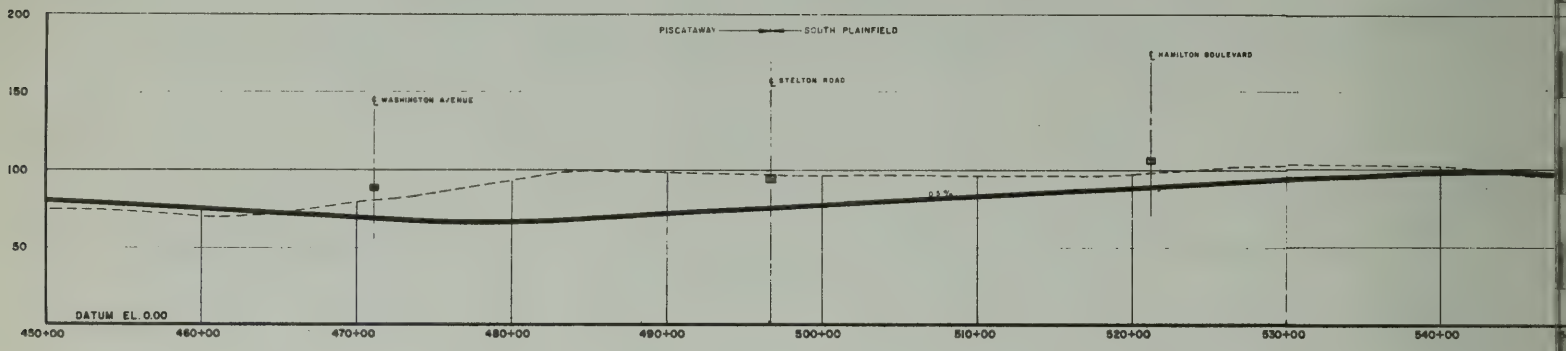
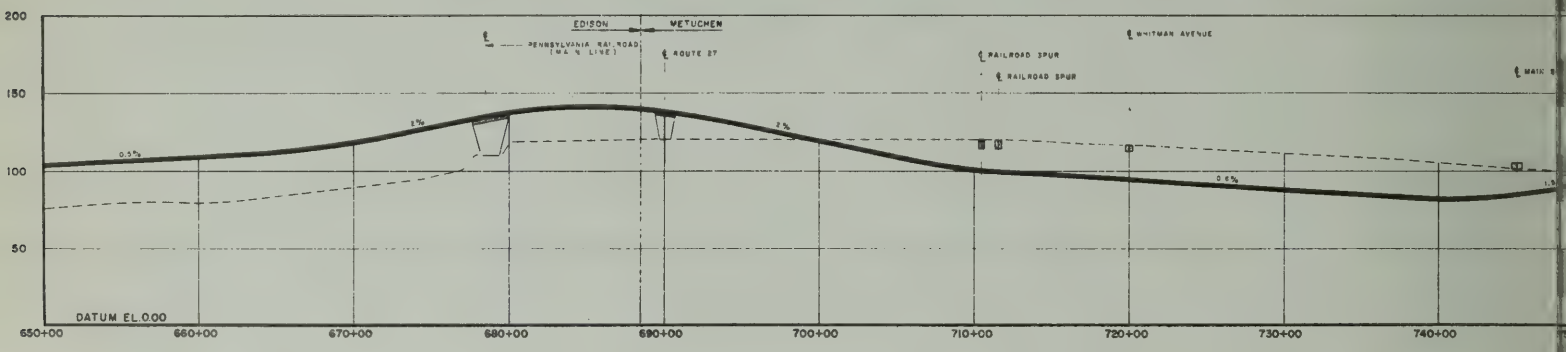
300+00
310+00
320+00
330+00
340+00


PISCATAWAY
SOUTH PLAINFIELD
WASHINGTON AVENUE
STELTON ROAD
HAMILTON BOULEVARD
DATUM EL. 0.00
200
150
100
50
450+00
460+00
470+00
480+00
490+00
500+00
510+00
520+00
530+00
540+00


EDISON
METUCHEN
PENNSYLVANIA RAILROAD (MAIN LINE)
ROUTE 27
WHITMAN AVENUE
RAILROAD SPUR
RAILROAD SPUR
DATUM EL. 0.00
200
150
100
50
650+00
660+00
670+00
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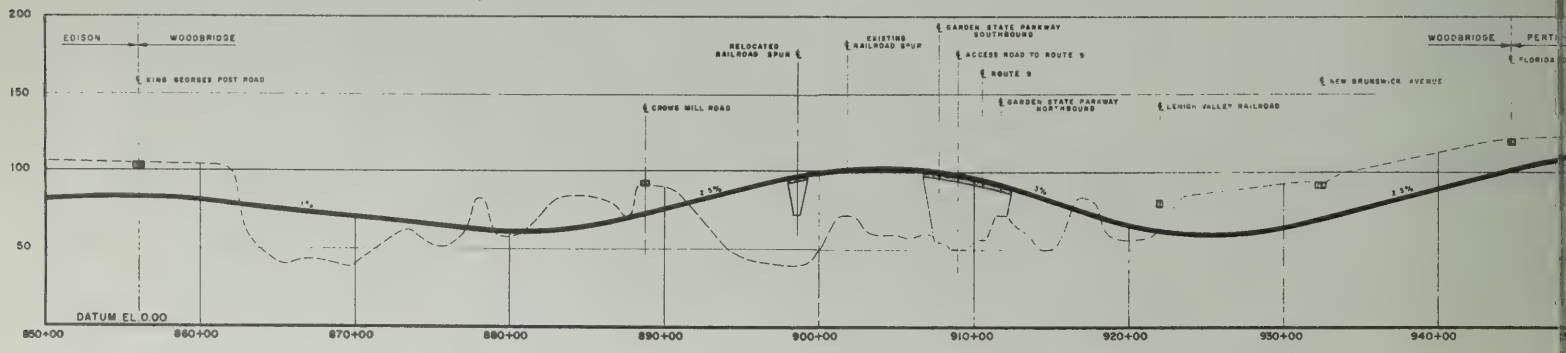
700+00
710+00
720+00
730+00
740+00


EDISON
WOODBRIDGE
KING GEORGES POST ROAD
CROWS MILL ROAD
RELOCATED RAILROAD SPUR
EXISTING RAILROAD SPUR
GARDEN STATE PARKWAY SOUTHBOUND
ACCESS ROAD TO ROUTE 9
ROUTE 9
GARDEN STATE PARKWAY NORTHBOUND
LEHIGH VALLEY RAILROAD
NEW BRUNSWICK AVENUE
WOODBRIDGE
DATUM EL. 0.00
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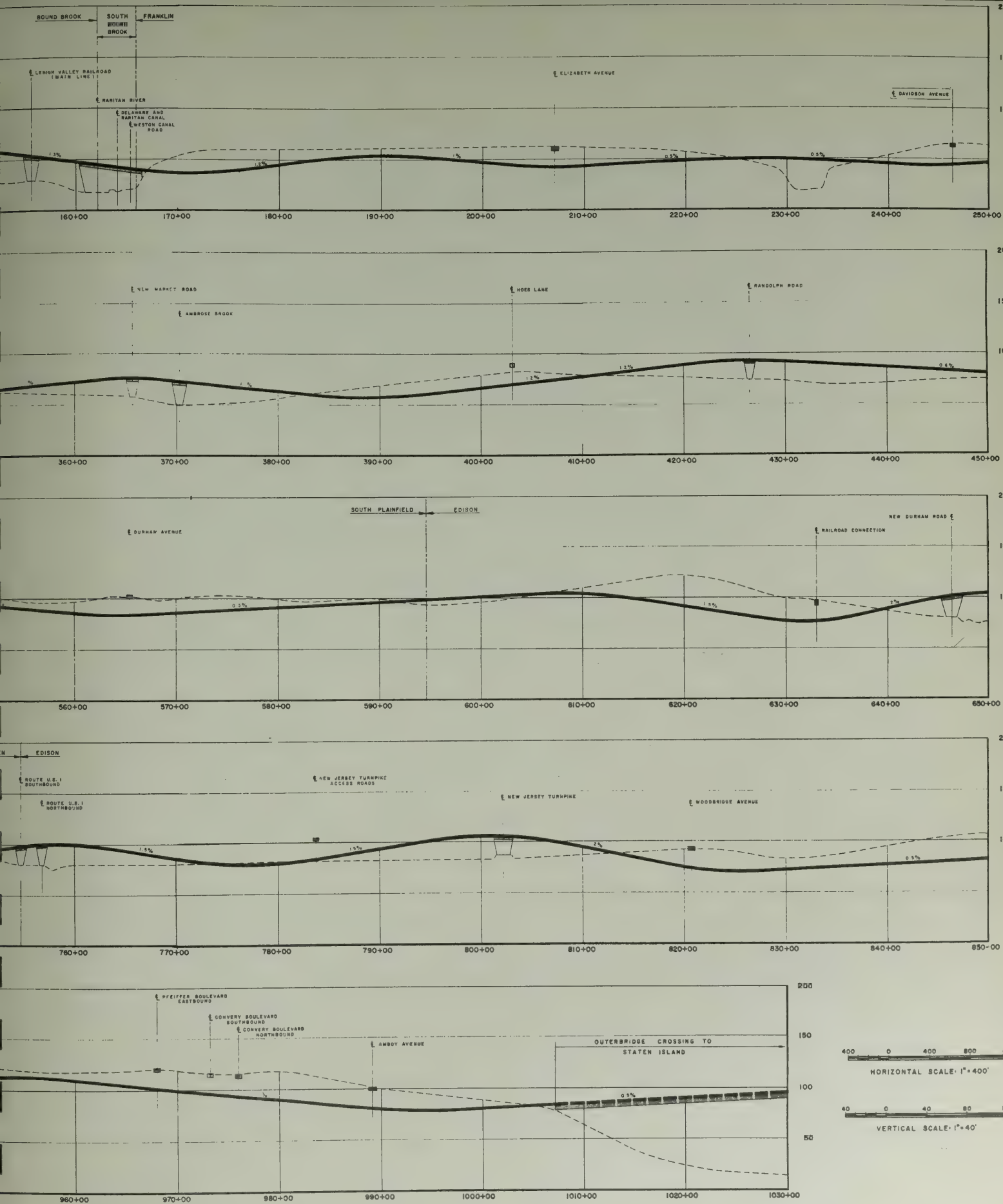

NEW JERSEY STATE HIGHWAY DEPARTMENT

PROFILE OF MIDDLESEX FREEWAY

ROUTE STUDIES IN EDISON AND PISCATAWAY

Through Edison and Piscataway townships the route studies narrow down to basic locations north or south of the Lehigh Valley and Reading railroads. These railroads form a barrier limiting southerly extension of the city street development which predominates on the north side. The area flanking the south side of the railroads has consequently remained undeveloped in comparison with the north side. While a route on one side of the railroad or the other would serve through traffic equally, a route north of the railroad involves acquisition of considerable built up land through residential areas.

Trucks from predominently industrial areas south of the Reading and Erie railroads would be forced to pass through the residential and shopping complex north of the railroads to reach a northerly Middlesex Freeway location. Existing approach roads in the immediate undeveloped area south of the railroad are better able to handle traffic to and from the Freeway than they are at an in-town location where local traffic adds to the congestion and where widening of approach roads and construction of adequate interchange facilities is more restricted by developed property.

Routes closely parallel to the railroad, such as Route Study 4, do not leave sufficient space for access and exit ramp connections with important feeder crossroads. A location near but not next to the railroad, such as Route Study 1, leaves a strip of potential industrial land having railroad frontage on one side and Freeway access on the other. This arrangement minimizes long travel on approach roads through built up areas by commercial and worker traffic, while enhancing the usefulness of adjacent vacant land for industrial use.

The locations south of the railroad, Route Studies 1 and 3, follow a middle belt route lying in a relatively undeveloped area suitable for industry. This middle belt is bordered by the Highland Park-New Brunswick populated area on the south and the Middlesex-South Plainfield-Edison-Woodbridge complex on the north. The middle belt location will siphon off traffic to the Middlesex Freeway from each side, while a route to the north of the railroad would force Freeway traffic from the southern complex to crowd in with all other traffic in the built up areas of Bound Brook, Metuchen and Fords on existing approaches in traveling to and from the Freeway.

Where there is a choice of route location along an existing road, such as Route Study 3 along Centennial Avenue and Amboy Avenue, and a location through vacant land, Route Study 1, the latter is superior since property values are generally lower, the land being less accessable than along the existing road. While Route 1 through Piscataway passes almost entirely through vacant land, none of which is proposed for development, Route 3, adjacent to New Durham Road and Centennial Avenue, crosses the corner of the Roman Catholic Diocese of Trenton property on Metlers Lane and Stelton Road and the site of planned housing at Centennial Avenue and River Road.

In the undeveloped location of Route Study 1 the Freeway will create the basic subdivision, initiating the development of the area by providing primary access. The new location through vacant land spares the existing road, resulting in two access facilities to serve the area instead of only one widened existing artery. Also, the Freeway in the new location will not interfere with traffic on the existing road during the construction period.

To avoid passing through developed property, Route Study 2 is forced to pass close to the railroad between Washington Avenue and Mountain Avenue in Piscataway Township, leaving insufficient space for loop interchange ramps which avoid left turn movements on the crossroads. The narrower strip of land remaining between the Freeway and the railroad would be insufficient for large scale development. This also applies to Route Study 4 which is adjacent to the railroad for most of its length in Piscataway and Edison townships.

Route Study 5 in this area would bisect Roosevelt Park and pass through the Metuchen Country Club. East of the New Jersey Turnpike the route crosses the area of a proposed school site that stradles the Woodbridge-Edison township line.

Route Study 7 is the general location recommended by the Middlesex County Planning Board, passing south of the Lehigh Valley Railroad in the Fords area. In Edison, 6000 feet of this route crosses the Raritan Arsenal. Route 1 is a modification of this location, increasing the distance from the operative portion of the Arsenal by 1000 feet further north than Route 7 and crossing the government property where it is about 3000 feet wide. Routes further south than location 3 would involve passing through Camp Kilmer as well as the Raritan Arsenal. In Piscataway, Route 7 passes through the Army Guided Missile bases.

ROUTE STUDIES IN FRANKLIN AND BRIDGEWATER

Investigation in the Bound Brook area reveals, in addition to east-west traffic relief, an urgent need for improved connections across the Raritan River for Somerville, South Bound Brook and New Brunswick traffic. In the location of Route Studies 1 or 3 the Middlesex Freeway will also serve this important function. At present this access is by way of an old bridge across the river between Bound Brook and South Bound Brook. Approaches to this bridge are congested city streets, one on the Bound Brook side which floods where it passes through a railroad bridge and becomes impassable during wet weather and periods of high river water. In Bound Brook this approach also crosses the Port Reading Freight Branch of the Philadelphia and Reading Railroad at grade.

Construction of another bridge over the Raritan River between Bound Brook and South Bound Brook appears inevitable, due to increasing traffic and longer delays at the existing bridge. It is therefore logical to favor a location for the Middlesex Freeway which would also provide the river crossing as an integral part of an overall traffic relief plan, since construction of either the bridge or the Freeway as separate projects at different times will increase the construction and right-of-way problems of the second project, due to the land development stimulent the first facility will create.

With Routes 1 or 3, near South Bound Brook in Franklin Township, an interchange at the junction of the Freeway and Easton Avenue along the southwest shore of the Raritan River will provide a direct route to New Brunswick. This interchange is designed so that Easton Avenue can be widened, when traffic warrants, by construction of another roadway separated from the existing pavement by a dividing park strip. Easton Avenue, between South Bound Brook and New Brunswick, has little cross traffic interference and is ideal as a major connecting artery.

Crossing of the Raritan River with the Freeway also taps the large undeveloped area of Franklin Township which is cut off from the west, north and east by the hairpin course of the river. In contrast, all study routes passing east of Bound Brook and not crossing the river would be of no benefit to traffic between Somerville, Bound Brook, South Bound Brook, Franklin and New Brunswick, thus curtailing maximum usefulness of the Freeway.

By locating the Freeway to pass east of Bound Brook, such as connecting the easterly portion of Route Study 1 and the westerly portion of Route Study 2 by Route 8, as shown on the exhibits, and building a separate spur along Middle Brook from U. S. 22 to Easton Avenue, such as the west portion of Route 1, the easterly Raritan River bridge could be eliminated. However, South Bound Brook traffic wishing to travel east on the Freeway would have to go in the opposite direction along the spur to U. S. 22 near Chimney Rock before turning east. The extra distance from a midpoint in South Bound Brook at Elizabeth Avenue on the spur, by way of U. S. 22, to the first common point where the alternatives 1 and 8 join near Sherman Avenue in Piscataway, is three and three quarter miles each way. A round trip via this spur adds seven and a half miles of extra travel to each trip between South Bound Brook and the Freeway on the east.

The cost of this spur scheme is estimated at $61,659,000. The cost of Route 1Y is $58,445,000. The difference of $3,214,000, representing the extra cost of the spur scheme to save one Raritan River bridge is, therefore, a negative economy.

The other alternative for building one river bridge instead of two, as required for Route 1, would bridge the easterly leg of the river from Easton Avenue to the main Freeway (Route 1 east into Route 2 west, using link 8). In this case, the new river crossing over the east leg of the Raritan would not serve Somerville-Bound Brook-New Brunswick traffic and, although it would offer a good connection between South Bound Brook and the Freeway to the east, this function could be fulfilled equally at less cost by extending Centennial Avenue to Easton Avenue, bridging the river and connecting to the Freeway on the east. With this alternative another crossing over the west leg of the river to relieve severe traffic congestion between Bound Brook and South Bound Brook would still be in ever increasing demand. Since a two bridge scheme resolves the limitations of the above mentioned alternatives, the spur schemes should be discarded in favor of Route 1 or 3.

Preliminary study indicates that the Freeway can be extended in the future, if desirable, beyond U. S. 22 in either route location 1 or 3. The alignment of Route Study 1 is located to utilize the entire length of dualized U. S. 22 to the Thompson Street overpass. Thus it is considered more advantageous than Route Study 3 which intersects Highway 22 almost a mile further west. Thus Route 3 lengthens the Freeway construction by 1.7 miles while it wastes a mile of dualized Highway 22. The Route 1 location is largely undeveloped and construction of the

Freeway here would also improve Middle Brook, which it follows between U. S. 22 and the Raritan River. In contrast, Route 3 traverses more improved and proposed to be improved property. Route 3 severs the Calco Chemical buildings from the plant storage area while a right-of-way in the Route 1 location has been offered by this company for arterial highway use.

While Route 1 severs a portion of the Ukranian Church National Headquarters, which is undeveloped, extensive undeveloped farm land adjacent to its east side offers the possibility of reunifying the property by exchange to compensate for the severed portion. The proposed housing development to the west side of the proposed Ukranian Church can also be reunited by using vacant land. Shifting Route 1 to avoid the church property and the housing site would involve passing through the site of a school being planned on Elizabeth Avenue. The route would also be shifted into the housing site being planned adjacent to the proposed Kotex site in Piscataway, unless a smaller radius is used for the alignment.

Route Study 2 in the Middlesex Borough area passes through developed property to reach U. S. 22. Interchanges would require more destruction of existing building improvements. Where Routes 2 and 4 intersect it, Lincoln Boulevard is very close and parallel to the New Jersey Central Railroad main line to make possible suitable interchange connections. Of these two, Route 2 would require the construction of a second road parallel to existing Highway 22 for a distance of two and a quarter miles east of the Thompson Street overpass. Route 4 would require three and a quarter miles of Highway 22 dualizing improvement.

In this area Route 7 is the line proposed originally by the Middlesex County Planning Board. This line is viewed in the same light as Routes 2 and 4 with respect to its being of limited service in that it does not serve traffic between Somerville, Bound Brook, South Bound Brook, Franklin and New Brunswick. In order to consider Routes 2, 4 and 7 comparable to Routes 1 and 3 insofar as Routes 1 and 3 serve the traffic demand between Franklin and Bridgewater Township, a spur between U. S. Highway 22 across the Raritan River to Easton Avenue would have to be included as described above for the one bridge alternative. These schemes, even with benefit of the spur, would still impose seven and a half miles of extra travel for each round trip between Franklin and the Freeway to the east. The estimates at the end of this report show the total cost of Route Study 2 with and without the above mentioned spur.

TRAFFIC REQUIREMENTS

The 1965 projected traffic volumes in a report by the New Jersey State Highway Department and the U. S. Bureau of Public Roads entitled, "Origin and Destination Survey — Middlesex County — August 1953," furnish the capacity and interchange design basis for the route studies analyzed herein.

The Origin and Destination Report Plates 3 and 12 showing traffic volumes on local east-west roads before and after construction of the Middlesex Freeway indicate how existing roads will be relieved of a large volume of through traffic diverted to the Freeway. This traffic relief will enable local roads to serve local traffic and collect and distribute Freeway traffic. Accordingly, traffic volumes projected for the Freeway call for three lanes in each direction, except east of Stelton Road in Piscataway Township where the projected traffic volume of 10,000 vehicles per day can be accommodated on four lanes.

The Middlesex County Origin and Destination Traffic Report did not extend west sufficiently to include existing and estimated traffic between Somerville and New Brunswick areas since its stated purpose was to determine east-west movements only. In 1954, the Board of chosen Freeholders of the County of Somerset, in meetings with the State Highway Commissioner, proposed a north-south highway between U. S. Highway 22 in Bridgewater and Franklin Townships. This proposal, outlined in a letter dated October 26, 1954, from the County Engineer to the State Highway Department, would be fulfilled by the Middlesex Freeway as shown in Route Study 1. Since Route Studies 1 and 3 cross the Raritan River and are able to serve this traffic in addition to the east-west volumes, six lanes for the portion of the Freeway west of Stelton Road to U. S. Highway 22 would be necessary.

Considering the absence of direct east-west roads between the eastern terminus of Centennial Avenue at Hoes Lane and the western end of New Durham Road at Stelton Road, all in Piscataway, there will be a need for local traffic to use the Freeway between these points. It is noted that local traffic is not included in the Freeway 1965 traffic volumes. In this location, the Middlesex Freeway would be the only road to fill this east-west gap which further justifies the six Freeway lanes.

COST ESTIMATES

MIDDLESEX FREEWAY

Itemized Engineer's Preliminary Comparative Cost Estimates

Items	Rt. Study 1W 18.1 Miles	Rt. Study 1X 18.1 Miles	Rt. Study 1Y 18.5 Miles	Rt. Study 1Z 17.9 Miles	Rt. Study 2 17.5 Miles	Rt. Study 3 19.6 Miles
Structures						
Bridges and Walls (See Itemized Estimates)	$20,443,000	$19,493,000	$22,842,000	$20,499,000	$13,016,000	$22,160,000
Elevated Structure	-	-	-	-	8,060,000	7,574,000
Total Structures	20,443,000	19,493,000	22,842,000	20,499,000	21,076,000	29,734,000
Other Construction						
Clearing Site	180,000	180,000	177,000	194,000	153,000	195,000
Maintenance of Traffic	540,000	535,000	635,000	690,000	347,000	505,000
Demolition of Buildings	199,000	289,000	182,000	245,000	122,000	146,000
Earthwork	5,215,000	5,175,000	5,442,000	5,509,000	3,646,000	6,354,000
Drainage	3,574,000	3,782,000	3,787,000	3,669,000	2,822,000	3,768,000
Utility Relocation	656,000	911,000	571,000	902,000	540,000	810,000
Street Paving	206,000	558,000	345,000	400,000	281,000	345,000
Freeway Paving	9,663,000	9,643,000	9,805,000	9,585,000	7,399,000	9,828,000
Concrete Curbs	19,000	75,000	30,000	51,000	36,000	56,000
Concrete Sidewalks	26,000	66,000	42,000	52,000	44,000	74,000
Stabilized Shoulder	1,078,000	1,077,000	1,130,000	1,048,000	878,000	1,237,000
Stone Block Paving	217,000	232,000	212,000	226,000	140,000	267,000
Rip-Rap Slope Protection	12,000	12,000	12,000	12,000	-	19,000
Topsoiling	1,005,000	985,000	1,105,000	1,136,000	718,000	1,040,000
Guard Rail	254,000	248,000	249,000	267,000	156,000	347,000
Delineators	24,000	23,000	22,000	23,000	15,000	24,000
Railroad Spur Relocation	-	-	25,000	80,000	-	80,000
Lighting of Interchanges Only	1,302,000	1,218,000	1,412,000	1,117,000	614,000	1,127,000
Total Other Construction	24,170,000	25,009,000	25,183,000	25,206,000	17,911,000	26,222,000
Total Construction Cost	$44,613,000	$44,502,000	$48,025,000	$45,705,000	$38,987,000	$55,956,000

MIDDLESEX FREEWAY

Itemized Engineer's Preliminary Comparative Cost Estimates
Continued

	Rt. Study 1W 18.1 Miles	Rt. Study 1X 18.1 Miles	Rt. Study 1Y 18.5 Miles	Rt. Study 1Z 17.9 Miles	Rt. Study 2 17.5 Miles	Rt. Study 3 19.6 Miles
Brought Forward: Total Construction Cost	$44,613,000	$44,502,000	$48,025,000	$45,705,000	$38,987,000	$55,956,000
Right-of-Way	10,852,000	12,448,000	10,420,000	11,000,000	13,300,000	14,350,000
Total Cost of Construction and Right-of-Way	$55,465,000	$56,950,000	$58,445,000	$56,705,000	$52,287,000	$70,306,000
Spur to Smith Street (Rt. 1W - 2.3 Miles)	4,625,000	-	-	-	-	-
(Rt. 1X - 1.7 Miles)	-	2,939,000	-	-	-	-
Spur from Rt. 22 to Easton Ave. (Rt. 2 - 4.0 Miles)	-	-	-	-	12,514,000	-
Grand Total	$60,090,000	$59,889,000	$58,445,000	$56,705,000	$64,801,000	$70,306,000
	20.4 Miles	19.8 Miles	18.5 Miles	17.9 Miles	21.5 Miles	19.6 Miles
	$ 2,946,000 per Mile	$ 3,025,000 per Mile	$ 3,159,000 per Mile	$ 3,168,000 per Mile	$ 3,014,000 per Mile	$ 3,587,000 per Mile
	61 Structures	66 Structures	64 Structures	63 Structures	53 Structures 1 Viaduct	62 Structures 1 Viaduct

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 1 Alternative W

Item No.	Structure	Freeway Over Freeway Under	Amount
	Smith Street Spur		
61	Lehigh Valley RR Spur	Over	$ 169,000
60	N. J. Turnpike	Over	683,500
59	WB Access Ramp	Under	377,500
			1,230,000
58	Amboy Avenue	Under	196,000
57	Convery Boulevard	Under	224,000
56	Florida Grove Road	Under	176,000
55	U. S. Highway 9	Over	369,000
54	WB Exit Ramp at Garden State Pkwy	Under	142,500
53	Garden State Parkway	Under	540,500
52	Main Street	Under	477,500
51	Ford Avenue & N. J. Turnpike	Over	3,384,000
50	Grandview Avenue	Under	223,500
49	Amboy Avenue	Over	280,000
48	Lehigh Valley RR	Over	264,000
			6,277,000
		Subtotal	$ 7,507,000

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 1 Alternative X

Item No.	Structure	Freeway Over Freeway Under	Amount
	Smith Street Spur		
66	Lehigh Valley RR Spur	Over	$ 169,000
65	WB Access Ramp	Under	296,000
			465,000
64	Amboy Avenue	Under	196,000
63	Convery Boulevard NB	Under	112,000
62	Convery Boulevard SB	Under	112,000
61	Retaining Wall EB		320,000
60	Retaining Wall WB		420,000
59	Florida Grove Road	Under	195,000
58	EB Access & Exit Ramps, Pfeiffer Boulevard	Under	74,500
57	U.S. Highway 9	Over	494,000
56	EB Exit Ramp	Over	107,500
55	King Georges Post Road	Over	325,000
54	WB Access Under WB Exit Ramp		216,000
53	Garden State Parkway	Over	656,000
52	Ford Avenue	Under	282,000
51	Amboy Avenue	Over	286,000
50	Lehigh Valley RR	Over	393,000
49	Woodbridge Avenue	Under	306,000
48	N.J. Turnpike	Over	832,000
			5,327,000
		Subtotal	$ 5,792,000

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 1 Alternative Y

Item No.	Structure	Freeway Over Freeway Under	Amount
64	Amboy Avenue	Under	$ 188,000
63	Convery Boulevard	Under	230,500
62	Florida Grove Road	Under	173,000
61	Pfeiffer Boulevard	Under	161,000
60	NB Garden State Pkwy & U.S. 9	Over	1,422,000
59	New Brunswick Avenue	Under	300,000
58	Lehigh Valley RR	Under	1,599,500
57	SB Garden State Pkwy & U.S. 9	Over	1,768,500
56	Lehigh Valley RR Spur	Over	223,500
55	EB Exit Ramp, WB Access Ramp	Over	86,000
54	EB Exit Ramp, Lehigh Valley RR Spur	Over	155,000
53	WB Access Ramp from NB Garden State Pkwy	Over	190,000
52	WB Access Ramp & Lehigh Valley RR Spur	Under	627,500
51	Crows Mill Road	Over	141,000
50	King Georges Post Road	Under	263,500
49	Woodbridge Avenue	Under	315,000
48	New Jersey Turnpike	Over	832,000
		Subtotal	$ 8,676,000

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 1 Alternative Z

Item No.	Structure	Freeway Over Freeway Under	Amount
63	Amboy Avenue	Under	$ 200,500
62	Convery Boulevard NB	Under	115,500
61	Convery Boulevard SB	Under	119,000
60	Pfeiffer Boulevard	Under	216,000
59	Florida Grove Road	Under	188,500
58	New Brunswick Avenue	Under	265,000
57	Lehigh Valley RR	Under	843,000
56	EB Access Ramp, Garden State Pkwy	Over	169,000
55	WB Access Ramp, Garden State Pkwy	Over	502,500
54	Garden State Parkway	Over	1,516,000
53	Lehigh Valley RR (Smith Street Spur)	Over	195,000
52	Lehigh Valley RR and WB Access (Smith Street Spur)	Over	481,500
51	Crows Mill Road	Under	181,500
50	King Georges Post Road	Under	193,000
49	Woodbridge Avenue	Under	315,000
48	New Jersey Turnpike	Over	832,000
		Subtotal	$ 6,333,000

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Common Portion of Route Study 1

Item No.	Structure	Freeway Over Freeway Under	Amount
47	Culvert (Station 750+75±)	Over	$ 70,000
46	Culvert (Station 750+75±)	Over	18,000
45	Culvert (Station 750+75±)	Over	18,000
44	WB Access Ramp, U.S. 1	Over	147,500
43	EB Exit Ramp, U.S. 1	Over	109,500
42	U.S. 1 NB	Over	331,500
41	U.S. 1 SB	Over	307,500
40	Main Street	Under	197,000
39	Whitman Avenue	Under	384,000
38	Pennsylvania RR Spur	Under	666,500
37	Pennsylvania RR Spur	Under	557,500
36	Highway 27	Over	335,500
35	Pennsylvania RR	Over	661,500
34	New Durham Road	Over	774,500
33	Philadelphia & Reading RR Spur	Under	633,000
32	Durham Avenue	Under	397,000
31	Hamilton Boulevard	Under	424,500
30	Stelton Road	Under	314,000
29	Washington Avenue	Under	221,500
28	Randolph Road	Over	265,000
27	Hoes Lane	Under	408,500
26	Culvert, Ambrose Brook	Over	94,000
25	New Market Road	Over	236,000
24	Culvert (Station 300+00)	Over	18,000
23	River Road	Under	216,500
22	Culvert (Station 290+00)	Over	18,000
21	Culvert (Station 290+00)	Over	18,000
20	Culvert (Station 280+50)	Over	24,000
19	Raritan River East Bridge	Over	1,903,500
18	EB Exit Ramp at Easton Avenue	Over	93,500
17	WB Access Ramp at Easton Avenue	Over	105,000
16	Easton Avenue	Over	240,500
15	Culvert (Station 250+50)	Over	18,000
14	Davidson Avenue	Under	208,000
13	Culvert (Station 230+00)	Over	42,000

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Common Portion of Route Study 1
Continued

Item No.	Structure	Freeway Over Freeway Under	Amount
12	Elizabeth Avenue	Under	$ 211,000
11	Raritan River West Bridge	Over	1,461,500
10	Lehigh Valley RR	Over	253,500
9	New Jersey Central RR	Over	237,500
8	Main Street	Over	338,500
7	Culvert at Main Street	Over	80,000
6	Culvert (Station 110+00)	Over	24,000
5	Highway 28	Over	371,500
4	Culvert (Station 100+00)	Over	94,000
3	Culvert at Ramp to U.S. 22	Over	20,000
2	U.S. Highway 22	Under	337,500
1	Chimney Rock Road and N.J. Central RR Spur	Under	260,000
		Subtotal	$14,166,000

Total Route Study 1 Alternative W $21,673,000

Total Route Study 1 Alternative X $19,958,000

Total Route Study 1 Alternative Y $22,842,000

Total Route Study 1 Alternative Z $20,499,000

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 2

Item No.	Structure	Freeway Over Freeway Under	Amount
	U. S. Highway 22 to Easton Avenue*		$ 4,396,000
35	Elevated Structure		8,060,000
34	Amboy Avenue	Under	201,500
33	Convery Boulevard	Under	251,000
32	Florida Grove Road	Under	170,000
31	Access to N. J. Turnpike	Over	355,000
30	N. J. Turnpike	Over	2,051,500
29	Woodbridge Avenue	Over	279,500
28	Culvert	Over	18,000
27	U. S. Highway 1	Under	292,000
26	Reading RR	Over	1,100,000
25	Reading RR	Under	541,500
24	Garden State Parkway	Over	884,000
23	Access to Garden State Parkway	Over	111,000
22	Culvert	Over	94,000
21	Culvert	Over	94,000
20	Pennsylvania RR	Under	2,327,000
19	Highway 27, NB	Under	331,500
18	EB Exit, Highway 27 SB	Over	72,500
17	Highway 27 SB	Under	391,000
16	Grove Avenue	Under	204,000
15	Plainfield Avenue	Over	236,000
14	Lehigh Valley RR	Over	297,500
13	Culvert	Over	68,000
12	Culvert	Over	24,000
11	Hamilton Boulevard	Under	246,500
10	New Brunswick Avenue	Under	216,500
9	Stelton Road	Over	229,000
8	Hoes Lane	Over	334,500
7	Culvert	Over	42,000
6	Lehigh Valley RR	Over	300,000
5	Lincoln Boulevard	Over	405,000
4	Harris Avenue	Under	263,500
3	Highway 28	Under	231,500

* Same as Route Study 1 Items Numbered 1 through 18

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 2
Continued

Item No.	Structure	Freeway Over Freeway Under	Amount
2	Culvert	Over	$ 94,000
1	Highway 22	Under	191,000
1A	Extension of Thompson Ave. Overpass	Under	68,000
		Total	$ 25,472,000

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 3

Item No.	Structure	Freeway Over Freeway Under	Amount
63	Elevated Structure		$ 7,574,000
62	N. J. Central RR Spur	Over	237,500
61	N. J. Central RR	Over	321,500
60	N. J. Central RR	Over	262,000
59	Washington Avenue	Under	366,000
58	New Brunswick Avenue	Over	161,500
57	Convery Boulevard	Under	200,500
56	Lehigh Valley RR	Over	1,100,000
55	Florida Grove Road	Under	272,500
54	EB Access Ramp, Garden State Pkwy	Over	169,000
53	WB Access Ramp, Garden State Pkwy	Over	502,500
52	Garden State Parkway	Over	1,516,000
51	Lehigh Valley RR Spur (Smith Street)	Over	195,000
50	Lehigh Valley RR Spur and WB Access (Smith Street)	Over	481,500
49	Crows Mill Road	Under	181,500
48	K ing George Post Road	Under	193,000
47	Woodbridge Avenue	Under	315,000
46	N. J. Turnpike	Over	832,000
45	Culvert	Over	70,000
44	Culvert	Over	18,000
43	Culvert	Over	18,000
42	WB Access Ramp U. S. Highway 1	Over	147,500
41	EB Exit Ramp, U. S. Highway 1	Over	109,000
40	U. S. Highway 1, NB	Over	331,500
39	U. S. Highway 1, SB	Over	307,500
38	Main Street	Under	197,000
37	Whitman Avenue	Under	384,000
36	Pennsylvania RR Spur	Under	666,500
35	Pennsylvania RR Spur	Under	557,500
34	Highway 27	Over	335,000
33	Pennsylvania RR	Over	661,500
32	New Durham Road	Under	774,500
31	Philadelphia & Reading RR Spur	Under	718,500
30	Durham Avenue	Under	196,500

MIDDLESEX FREEWAY

Engineer's Preliminary Estimate of Structures
Route Study 3
Continued

Item No.	Structure	Freeway Over Freeway Under	Amount
29	Stelton Road	Over	$ 402,000
28	Washington Avenue	Under	241,500
27	Randolph Road	Over	267,000
26	Hoes Lane	Over	283,000
25	New Market Road & Ambrose Brook	Over	450,000
24	Culvert	Over	68,000
23	River Road	Under	278,000
22	Culvert	Over	44,000
21	Raritan River East Bridge	Over	1,982,000
20	EB Exit Ramp at Easton Avenue	Over	93,500
19	WB Access Ramp at Easton Avenue	Over	105,000
18	Easton Avenue	Over	254,000
17	Culvert	Over	24,000
16	Davidson Avenue	Under	241,500
15	Culvert	Over	44,000
14	Elizabeth Avenue	Under	174,000
13	Culvert	Over	68,000
12	Culvert	Over	44,000
11	Raritan River West Bridge	Over	1,415,500
10	Delaware RR	Over	265,000
9	Culvert	Over	18,000
8	N. J. Central RR	Over	261,500
7	N. J. Central RR	Over	234,000
6	Chimney Rock Road	Over	710,000
5	Main Street	Over	345,000
4	Culvert	Over	24,000
3	Highway 28	Under	237,000
2	Culvert	Over	18,000
1	Highway 22	Under	369,500
		Total	$29,734,000

MIDDLESEX

Engineer's Preliminary Comparative

Section	Route Study 1W Length	Route Study 1W Cost	Route Study 1X Length	Route Study 1X Cost	Route Study 1Y Length	Route Study 1Y Cost
Section A						
Route 22 to Easton Avenue	4.0 Mi.		4.0 Mi.		4.0 Mi.	
Construction		$10,346,000		$10,346,000		$10,346,000
Right-of-Way		2,168,000		2,168,000		2,168,000
Section Total		$12,514,000		$12,514,000		$12,514,000
Section B						
Easton Avenue to Stelton Road	4.3 Mi.		4.3 Mi.		4.3 Mi.	
Construction		$ 8,438,000		$ 8,438,000		$ 8,438,000
Right-of-Way		1,822,000		1,822,000		1,822,000
Section Total		$10,260,000		$10,260,000		$10,260,000
Section C						
Stelton Road to New Durham Road	2.8 Mi.		2.8 Mi.		2.8 Mi.	
Construction		$ 5,680,000		$ 5,680,000		$ 5,680,000
Right-of-Way		1,200,000		1,200,000		1,200,000
Section Total		$ 6,880,000		$ 6,880,000		$ 6,880,000
Section D						
New Durham Road to Outerbridge Crossing	7.0 Mi.		7.0 Mi.		7.4 Mi.	
Construction		$20,149,000		$20,038,000		$23,561,000
Right-of-Way		5,662,000		7,258,000		5,230,000
Section Total		$25,811,000		$27,296,000		$28,791,000
Route Total	18.1 Mi.	$55,465,000	18.1 Mi.	$56,950,000	18.5 Mi.	$58,445,000
Spur to Smith Street	2.3 Mi.	$ 4,625,000	1.7 Mi.	$ 2,939,000	-	-
Spur from U.S. 22 to Easton Avenue	-	-	-	-	-	-
GRAND TOTAL	20.4 Mi.	$60,090,000	19.8 Mi.	$59,889,000	18.5 Mi.	$58,445,000

FREEWAY

Cost Estimates by Sections

Route Study 1Z Length	Route Study 1Z Cost	Route Study 3 Length	Route Study 3 Cost	Section	Route Study 2 Length	Route Study 2 Cost
				Section A		
				Along U.S. 22,		
				Chimney Rock Road		
				to East of Mountain Av.	1.7 Mi.	
4.0 Mi.		5.2 Mi.		Construction		$ 655,000
	$10,346,000		$11,410,000	Right-of-Way		1,540,000
	2,168,000		2,326,000	Section Total		$ 2,195,000
	$12,514,000		$13,736,000			
				Section B		
				U.S. 22 to New		
				Brunswick Road	5.1 Mi.	
4.3 Mi.		4.5 Mi.		Construction		$ 7,961,000
	$ 8,438,000		$ 9,236,000	Right-of-Way		3,630,000
	1,822,000		1,846,000	Section Total		$11,591,000
	$10,260,000		$11,082,000			
				Section C		
				New Brunswick Road		
				to Garden State Pkwy	5.9 Mi.	
2.8 Mi.		2.1 Mi.		Construction		$10,662,000
	$ 5,680,000		$ 4,643,000	Right-of-Way		2,877,000
	1,200,000		922,000	Section Total		$13,539,000
	$ 6,880,000		$ 5,565,000			
				Section D		
				Garden State Pkwy to		
				Outerbridge Crossing	4.8 Mi.	
6.8 Mi.		7.8 Mi.		Construction		$19,709,000
	$21,241,000		$30,667,000	Right-of-Way		5,253,000
	5,810,000		9,256,000	Section Total		$24,962,000
	$27,051,000		$39,923,000			
17.9 Mi.	$56,705,000	19.6 Mi.	$70,306,000		17.5 Mi.	$52,287,000
-	-	-	-		-	-
-	-	-	-		4.0 Mi.	$12,514,000
17.9 Mi.	$56,705,000	19.6 Mi.	$70,306,000		21.5 Mi.	$64,801,000

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U.S. Route 22
MIDDLESEX
BOUND BROOK
BRIDGEWATER
SOMERVILLE
MIDDLESEX COUNTY
SOMERSET COUNTY
PISCATAWAY
SOUTH BOUND BROOK
RIVER
RARITAN
MANVILLE
FRANKLIN
SOUTH PLAINFIELD
METUCHEN
U.S. Route 1
EDISON
PISCATAWAY
New Jersey Turnpike

U.S. Route 22
MIDDLESEX
BOUND BROOK
SOMERVILLE
BRIDGEWATER
MIDDLESEX
SOMERSET
COUNTY
PISCATAWAY
RIVER
SOUTH
BOUND BROOK
RARITAN
4
MANVILLE
FRANKLIN
4
SOUTH PLAINFIELD
METUCHEN
U.S. Route 1
PISCATAWAY
EDISON
New Jersey Turnpike
2
2